
A MEASUREMENT OF THE PARITY-VIOLATING GAMMA-RAY ASYMMETRY IN THE NEUTRON-PROTON CAPTURE

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The NPDGamma experiment, currently under construction at LANSCE, aims to study the parity-violating weak interaction between protons and neutrons in the $\vec{n}+p\rightarrow d+\gamma$ reaction. For the experiment NPDGamma collaboration has built a new flight path 12 at LANSCE, where pulsed cold neutrons are delivered. Neutrons are polarized by a ^3He spin filter, and captured in a liquid para-hydrogen target. The 2.2-MeV gamma rays resulting from the reaction are detected in an array of CsI detectors in current mode. The goal of the experiment is to measure the parity-violating directional gamma asymmetry A_γ to an accuracy of 5×10^{-9} , which is approximately 10% of its predicted value. A result from the NPDGamma experiment will provide a theoretically clean measurement of the weak pion-nucleon coupling, thus resolving the long-standing controversy in nuclear physics over its value. Commissioning of the experiment starts in January 2004. In this talk an overview and current status of the experiment will be presented.